



PPD Seminar

Searching for CP violation in the Higgs sector using the $H \rightarrow \tau\tau$ decay channel

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The question of why the visible universe is made of matter, when we expect matter to have been produced in equal amounts with antimatter before annihilating, is one of the biggest unsolved mysteries in physics. Generating a matter-antimatter asymmetry requires CP violation, yet the CP violation in the standard model falls short of explaining the matter surplus by around ten orders of magnitude. An exciting possibility is that CP violation occurs in the Higgs sector, which can generate a matter excess during the electroweak phase transition. The most promising avenue to test this is by studying Higgs boson decays into tau leptons, as spin correlations between the taus are sensitive to the CP nature of the Higgs. I will present the latest measurement of this process using the CMS experiment at the LHC. I will also discuss prospects for enhancing these measurements going forward, exploiting the much larger datasets that will be recorded at the High-Luminosity LHC.

